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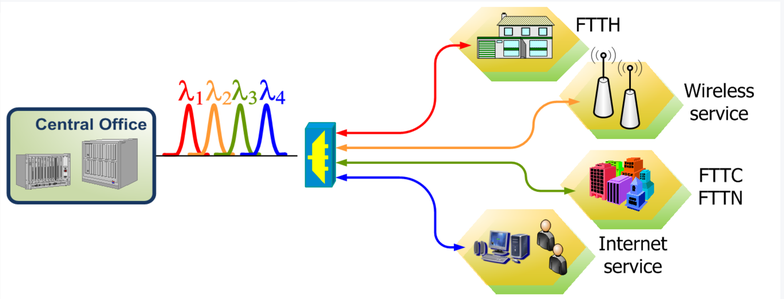
Scenario

Wired and Wireless Service Convergence in Access Network



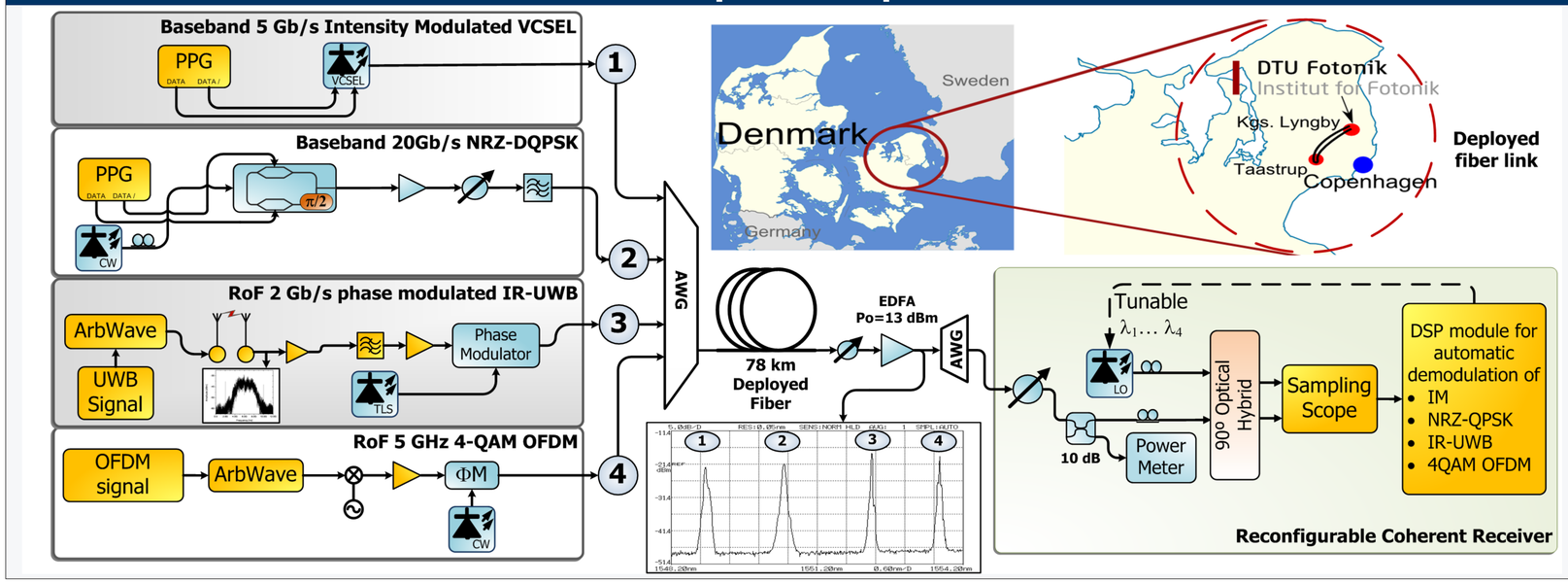
- Next generation networks need to support **diverse broadband services**
- Need for **re-configurability** and accomodation of **bandwidth requirements**

Simultaneous transmission of wireless and wireline signals over the same optical fiber access platform

Key Technologies

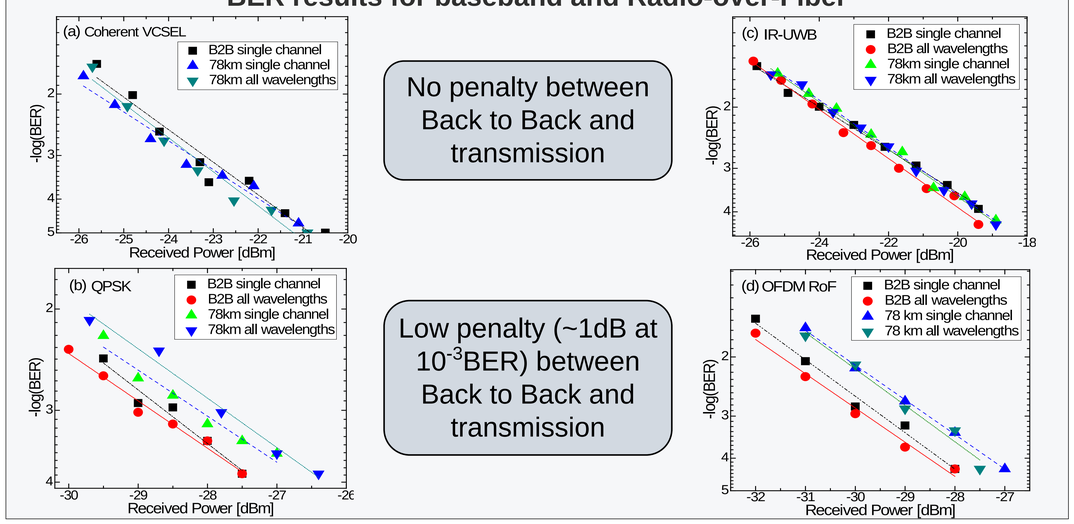
- **Mixed modulation formats, baseband and Radio-over-Fiber, supporting wireline and wireless services:**
  - Baseband 5 Gbps Intensity-Modulated VCSEL
  - Baseband 20 Gbps NRZ-DQPSK
  - Radio-over-Fiber 2 Gbps phase-modulated IR-UWB
  - Radio-over-Fiber 5 GHz 4-QAM OFDM
- **Single reconfigurable digital coherent receiver**
  - Linear signal demodulation
  - Frequency offset compensation
  - Digital phase-locked loop (DPLL)
  - Digital dispersion compensation

Setup Description



Results

BER results for baseband and Radio-over-Fiber



No penalty between Back to Back and transmission

Low penalty (~1dB at 10^{-3}BER) between Back to Back and transmission

Conclusions

- **Single reconfigurable DSP enabled coherent receiver supporting heterogeneous wireless/wireline next generation metro-access networks**
- Experimental demonstration of **simultaneous transmission** of different types of services over deployed fiber link
- Experimental demonstration **automatic recognition of modulation formats**

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